

Washington University Law Review

Volume 1976

Issue 1 *Symposium: The First Amendment and the Right to Know*

January 1976

Secondary Recovery Operations and the Rule of Capture, *Young v. Ethyl Corp.*, 521 F.2d 771 (8th Cir. 1975)

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Recommended Citation

Secondary Recovery Operations and the Rule of Capture, Young v. Ethyl Corp., 521 F.2d 771 (8th Cir. 1975), 1976 WASH. U. L. Q. 148 (1976).

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SECONDARY RECOVERY OPERATIONS AND THE RULE OF CAPTURE

Young v. Ethyl Corp., 521 F.2d 771 (8th Cir. 1975)

Plaintiff owned 180 acres of Arkansas farmland¹ surrounded by land in which defendants held mineral and salt-water leases.² By the use of

1. The land involved in the recovery operation is known as the "Kerlin Brine Field" and overlies the Smackover Lime Formation. Salt water brine is extracted from the formation at a depth of 8200 feet. *Young v. Ethyl Corp.*, 382 F. Supp. 769, 772 (W.D. Ark. 1974), *rev'd*, 521 F.2d 771 (8th Cir. 1975).

2. Plaintiff owned 180 acres of land in fee which were surrounded by 16,000 acres owned or leased by defendants who were engaged in a bromine extraction operation. During the mining operation, salt water bearing bromine was displaced from beneath plaintiff's land and extracted through defendants' wells. 382 F. Supp. at 771.

Before commencing extraction, defendants had unsuccessfully attempted to acquire plaintiff's mineral and salt water rights. Defendants offered plaintiff \$25 per acre and, in addition, \$10 per acre per year. Other owners in the 16,000 acre block comprising the area of operation had accepted similar terms. *Id.*

Because plaintiff owned in fee the land from which the minerals were drained, as opposed to owning only the gas and oil rights, he had a vested interest in nonsolid minerals underlying the property. *Middleton v. Western Coal and Mining Co.*, 241 F. Supp. 407, 415 (W.D. Ark. 1965), *aff'd*, 362 F.2d 48 (8th Cir. 1966); *Skelly Oil Co. v. Johnson*, 209 Ark. 1107, 1119, 194 S.W.2d 425, 431 (1946); *Bodcaw Lumber Co. v. Goode*, 160 Ark. 48, 61, 254 S.W. 345, 349 (1923); *Osborn v. Arkansas Territorial Oil & Gas Co.*, 103 Ark. 175, 179-80, 146 S.W. 122, 124 (1912). A mineral lease merely grants the lessee an inchoate right to drill for such minerals; title does not vest until the minerals are recovered. In both *Budd v. Ethyl Corp.*, 251 Ark. 639, 642, 474 S.W.2d 411, 413 (1971), and *Young v. Ethyl Corp.*, 521 F.2d 771, 773 n.3 (8th Cir. 1975), the courts quoted with approval *Osborn v. Arkansas Territorial Oil & Gas Co.*, 103 Ark. 175, 180, 146 S.W. 122, 124 (1912):

A gas lease, such as is involved in this case, is a contract granting to the lessee the right to explore the land and to produce therefrom the gas therein discovered. It is not a present sale or transfer of title to the gas, but, on account of its vagrant nature, the gas does not become actually owned until actually possessed. As is said in the case of *Williamson v. Jones*, 39 W. Va. 231 [19 S.E. 436 (1894)]: 'The title is dependent on finding the gas by the purchaser in a limited time,' and is inchoate.

In *Budd*, the plaintiff held a mineral lease for land being drained by a nearby salt water mining operation. The court stressed that the plaintiff's interest in the minerals was inchoate and found no trespass against a vested property right. *Budd v. Ethyl Corp.*, 251 Ark. 639, 642, 474 S.W.2d 411, 413 (1971). For a further explanation of *Budd*, see note 25 *infra*.

In both *Budd* and *Young*, plaintiffs contended that the defendants committed an actionable trespass by forcing a foreign substance, debrominated water, into the ground and through the subsurface of plaintiffs' land. *Budd v. Ethyl Corp.*, 251 Ark. 639, 642-43, 474 S.W.2d 411, 413 (1971); Brief for Appellant at 25, *Young v. Ethyl Corp.*, 521 F.2d 771 (8th Cir. 1975). The debrominated water forced valuable brine from beneath plaintiff's land and into defendants' wells. This underground movement of fluid across property lines was the basis for both claims of trespass. *Young v. Ethyl Corp.*, 382 F.

wells surrounding plaintiff's property, defendants injected debrominated salt water³ into the ground to force valuable brine⁴ beneath plaintiff's

Supp. 769, 772 (W.D. Ark. 1974); *Budd v. Ethyl Corp.*, 251 Ark. 639, 639, 474 S.W.2d 411, 412 (1971).

Three major theories—ownership-in-place, nonownership, and qualified ownership—have been developed to protect a landowner's interest in nonsolid minerals located beneath his land. 1 H. WILLIAMS & C. MEYERS, OIL AND GAS LAW § 203.1-203.3 (1975) [hereinafter cited as WILLIAMS & MEYERS]. Arkansas adheres to the ownership-in-place theory; see *Bodcaw Lumber Co. v. Goode*, *supra* at 61, 254 S.W. at 349 (owner of land holds vested property right in all oil, gas, and other nonsolid minerals located beneath surface of land). A property owner's interest in these minerals is the same as one in solid minerals, but continues only while the nonsolid minerals are in place beneath the property. The landowner is divested of title should such minerals migrate from beneath his land and be "captured" through a well on another's property. "The rule of capture appears equally applicable in all states, whatever the basic theory adopted as to the nature of the landowner's interest." 1 WILLIAMS & MEYERS § 204.4, at 50. The plaintiff in *Young* claimed that title could be divested only when the migration was natural, not forced. Brief for Appellant at 14, *Young v. Ethyl Corp.*, 521 F.2d 771 (8th Cir. 1975).

The nonownership theory means that ownership of oil, gas, or other nonsolid minerals does not vest until they are extracted from the ground. This theory assumes that oil and gas are fugacious. See note 13 *infra*. Early in the development of this theory, courts analogized oil and gas law to the law of wild animals, *ferae naturae*. Ownership of *ferae naturae*, like ownership of oil and gas, does not attach until the animal is reduced to possession. 1 WILLIAMS & MEYERS § 203.1.

The third theory, qualified ownership, initially differed from nonownership in only one respect. In qualified ownership jurisdictions an oil or gas producer had "correlative duties" not to waste oil or gas or damage the formation, and thus reduce the total recovery from a common pool. Nonownership jurisdictions have recently developed the same "correlative duties" so that the two theories are now essentially the same. *Id.* at § 203.2.

3. Primary production of nonsolid minerals relies on the "natural pressure of the field" to force the mineral through the well bore. The natural pressure that causes the substance to move toward the well decreases as large quantities of the mineral are removed from the reservoir. Eventually, the natural pressure drops so low that continued primary production becomes impossible. While the cost of primary production is low compared to other production methods, only a small percentage of the mineral in place can be recovered. If the reservoir retains enough mineral to justify increased costs, producers institute secondary production measures. Driscoll, *Secondary Recovery of Oil and Gas: The Significance of Agency Approval*, 13 U. KAN. L. REV. 481, 481 (1965).

Secondary recovery operations have enabled the oil and gas industry to increase dramatically recovery from a reservoir. The term "secondary recovery" encompasses a variety of techniques in which a foreign substance, often salt water or depleted natural gas, is injected into the reservoir to force the more valuable minerals to move toward a production well. *Id.* Secondary recovery describes situations in which injection commences after the reservoir has reached the limit of primary production. When injection begins before the reservoir reaches that limit, the technique is termed "pressure maintenance." While pressure maintenance is often referred to as a secondary recovery method, this is technically incorrect. Roark, *Advancing Technology and the Relationship Between the Lawyer and the Engineer*, 19TH ANN. INST. ON OIL AND GAS LAW AND TAXATION 143, 147 (1968).

4. The defendants extracted through their production wells salt water brine con-

land toward defendants' production wells.⁵ Plaintiff sought an injunction,⁶ and damages or an accounting⁷ for defendants' subsurface trespass and conversion. The federal district court⁸ applied the rule of capture⁹ and dismissed the action.¹⁰ The United States Court of

taining the mineral bromine. The water was piped to a nearby chemical plant where the bromine was removed. The waste salt water was then returned to the field and injected into the reservoir as the pressurizing substance. The process of extracting the valuable brine from the field, removing the bromine, and returning the waste water to the field to maintain pressure is known as a "recycling operation." *Young v. Ethyl Corp.*, 382 F. Supp. 769, 771-72 (W.D. Ark. 1974), *rev'd*, 521 F.2d 771 (8th Cir. 1975).

The district court described bromine as a "deep red, caustic liquid emitting an irritating, reddish-brown, ill-smelling vapor used, *inter alia*, for manufacture of ethylene dibromide, a gasoline additive chemical." *Id.* at 771 n.1.

5. Secondary recovery involves two sets of wells, one set to inject the pressure-causing substance and another set to produce the mineral. In *Young*, plaintiff's land was located near the southwest corner of defendants' parcel. Defendants operated ten input wells on the perimeter of their property. Input well number 13 was immediately south of plaintiff's property; production wells number 18 and number 23 were located just north of plaintiffs' property. *Id.* at 772. The district court noted:

It is established, and undisputed, that the injection of debrominated waters from the defendants' plant through well numbered 13, under high pressure, displaces the brine waters in the formation underlying the plaintiff's lands, forcing it to move toward, and eventually produce through wells numbered 18 and 23.

Id.

6. The injunction was sought against the continued operation of the chemical plant. *Id.* at 770.

7. Plaintiff also sought an accounting of the gross proceeds of defendants' plant or, alternatively, the gross sales of all products. The purpose of the accounting was to claim a proportionate share of the products or sales "therefrom taken from his lands as bears to the whole of the products going into the plant." *Id.* In addition, plaintiff wanted to establish, and recover for, damages to his property caused by the recycling operation and operation of the plant. *Id.* Plaintiff's theory of recovery was trespass. *Id.* See note 46 *infra* and accompanying text.

8. Federal jurisdiction was based upon diversity of citizenship, 28 U.S.C. § 1332 (1970). 382 F. Supp. at 771. Defendant Ethyl Corporation is a Virginia corporation; defendant Great Lakes Chemical Corporation is a Michigan corporation; defendant Calvert Exploration Company is a Delaware corporation; and defendant Bromet Company is a limited partnership with Ethyl Corporation as the sole general partner and Great Lakes Chemical Corporation as the sole limited partner. Bromet Company became a limited partnership under the laws of Virginia. *Id.* at 771-72. Plaintiff, a citizen of Arkansas, alleged damages of \$9,000,000. *Id.* at 772.

9. The rule of capture has been phrased:

The owner of a tract of land acquires title to the oil and gas which he produces from wells drilled thereon, though it may be proved that part of such oil and gas migrated from adjoining lands.

1 WILLIAMS & MEYERS § 204.4, at 50. See note 12 *infra*.

10. *Young v. Ethyl Corp.*, 382 F. Supp. 769, 774 (W.D. Ark. 1974), *rev'd*, 521 F.2d 771 (8th Cir. 1975).

Appeals for the Eighth Circuit reversed, found an actionable trespass, and held: The rule of capture does not apply to the forced migration of nonfugacious minerals.¹¹

The rule of capture provides that the operator of a well gains title to all minerals extracted through that well regardless of their place of origin.¹² In the early 1900's, scientists were unable to measure subter-

11. *Young v. Ethyl Corp.*, 521 F.2d 771, 775 (8th Cir. 1975).

12. In *Westmoreland & Cambria Natural Gas Co. v. Dewitt*, 130 Pa. 235, 18 A. 724 (1889), the court stated:

Water and oil, and still more strongly gas, may be classed by themselves, if the analogy be not too fanciful, as minerals *ferae naturae*. In common with animals, and unlike other minerals, they have the power and the tendency to escape without the volition of the owner. Their 'fugitive and wandering existence within the limits of a particular tract was uncertain,' as said by Chief Justice Agnew in *Brown v. Vandergrift*, 80 Pa. 147, 148. They belong to the owner of the land, and are part of it, so long as they are on or in it, and are subject to his control; but when they escape, and go into other land, or come under another's control, the title of the former owner is gone. Possession of the land, therefore, is not necessarily possession of the gas. If an adjoining, or even distant, owner, drills his own land, and taps your gas, so that it comes into his well and under his control, it is no longer yours, but his.

Id. at 249-50, 18 A. at 725.

The landowner's remedy for this problem was later said to be "go and do likewise." *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362, 365, 65 A. 801, 802 (1907). In *Barnard*, quoted in Hardwicke, *The Rule of Capture and Its Implications as Applied to Oil and Gas*, 13 TEXAS L. REV. 391, 397 (1935), the court stated:

'An oil or gas well may draw its product from an indefinite distance and in time exhaust a large space. Exact knowledge on this subject is not at present attainable, but the vagrant character of the mineral and the porous sand rock in which it is found and through which it moves, fully justify the general conclusion we have stated above and have led to its general adoption by practical operators.' [quoting *Wettengel v. Gormley*, 160 Pa. 559, 567, 28 A. 934, 935 (1894)].

'The right of every landowner to drill a well on his own land at whatever spot he may see fit' certainly must be conceded. If, then, the landowner drills on his own land at such a spot as best subserves his purposes what is the standing of the adjoining landowner whose oil or gas may be drained by this well? He certainly ought not to be allowed to stop his neighbor from developing his own farm. There is no certain way of ascertaining how much of the oil and gas that comes out of the well was when in situ under this farm and how much under that. What then has been held to be the law?—it is this, as we understand it, every landowner or his lessee may locate his wells wherever he pleases, regardless of the interests of others. He may distribute them over the whole farm or locate them only on one part of it. He may crowd the adjoining farms so as to enable him to draw the oil and gas from them. *What then can the neighbor do? Nothing, only go and do likewise. He must protect his own oil and gas.* He knows it is wild and will run away if it finds an opening and it is his business to keep it at home. This may not be the best rule, but neither the legislature nor our highest court has given us any better. No doubt many thousands of dollars have been expended 'in protecting lines' in oil and

anean oil and gas deposits and therefore assumed that these substances were fugacious,¹³ that is, apt to wander. To settle title disputes, courts adopted the rule of capture as an easy and practical solution.¹⁴ Recently, an improved understanding of the characteristics of oil and gas deposits, combined with an improved ability to control underground drainage,¹⁵ have undermined the original basis for the rule.¹⁶ Yet, the

gas territory that would not have been expended if some rule had existed by which it could have been avoided. Injunction certainly is not the remedy.

Barnard v. Monongahela Natural Gas Co., *supra* at 365, 65 A. at 802 (emphasis added). See generally 1 W. SUMMERS, *THE LAW OF OIL & GAS* § 61 (1954) [hereinafter cited as SUMMERS]; 1 WILLIAMS & MEYERS § 204.4; Hardwicke & Woodward, *Fair Share and the Small Tract in Texas*, 41 TEXAS L. REV. 75 (1962).

13. "The Oxford English Dictionary defines fugacious as meaning 'apt to flee away or flit' and fugacity as meaning 'volatile'." *Young v. Ethyl Corp.*, 521 F.2d 771, 774 n.7, quoting IV THE OXFORD ENGLISH DICTIONARY 584 (1971).

14. See, e.g., *Acme Oil & Mining Co. v. Williams*, 140 Cal. 681, 74 P. 296 (1903); *People's Gas Co. v. Tyner*, 131 Ind. 277, 31 N.E. 59 (1892); *Louisville Gas Co. v. Kentucky Heating Co.*, 117 Ky. 71, 77 S.W. 368 (1903); *Higgins Oil & Fuel Co. v. Guaranty Oil Co.*, 145 La. 233, 82 So. 206 (1919); *Kelley v. Ohio Oil Co.*, 57 Ohio St. 317, 49 N.E. 399 (1897); *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362, 65 A. 801 (1907), quoted in note 12 *supra*; *Wettengel v. Gormley*, 160 Pa. 559, 28 A. 934 (1894), cited in note 12 *supra*; *Westmoreland & Cambria Natural Gas Co. v. Dewitt*, 130 Pa. 235, 18 A. 724 (1889), quoted in note 12 *supra*. For a more complete list of early rule of capture cases, see Hardwicke, *supra* note 12, at 404 n.17.

15. Since 1960, mining technology in the oil and gas industry has undergone a revolution. Many new processes have reached the stage of economic and technological practicality and are beginning to receive wide acceptance within the industry. Among the newer methods are miscible displacement, chemical additives, fracturing, and thermal processes. The oldest secondary recovery method, and the one most commonly in use today, is waterflooding. See Roark, *supra* note 3, at 143-44.

In its least sophisticated form the waterflooding technique merely involves the injection of salt water into a reservoir of oil. The oil is displaced by the salt water and moves toward the production wells. The placement of input and production wells is crucial to the success of the project. As a result of the dependability of waterflooding, scientists are investigating the possibility of increasing the displacement efficiency of salt water. Dow Chemical Company and Union Oil Company have developed a "pusher" chemical which has been successful in displacing low gravity oils. Other additives are being considered. *Id.* at 155.

Miscible displacement involves the creation of a bank of fluid between the oil and the displacing agent. The fluid bank is totally soluble in the oil ahead of it and the displacing agent behind it. Natural gas is the most widely used displacement agent. In the few regions in which this technique has been put to practical, as opposed to experimental, use the recovery of oil is almost 100 percent. The uncertainties and the cost of this new method have so far discouraged its extensive use. *Id.* at 155-56.

Heavy oils become more mobile under heat. The existence of large reserves of heavy oils has led to the development of techniques that deliver heat to the reservoir. In one technique, steam is injected into the reservoir. After injection the reservoir is quickly

rule survives in virtually all jurisdictions.¹⁷

The impact of the rule of capture has been softened by the development of the common law doctrine of "correlative rights"¹⁸ which pro-

returned to production. The feasibility of thermal processes is still in doubt; cost is high and success unproven. *Id.* at 156.

Fracturing is the technique of opening new fissures in the reservoir rock and widening those that already exist. Providing larger openings for the oil or gas means less pressure is needed to produce more mineral. The materials that create the fissures are called propping agents. Fluids carrying these agents, often graded sand or glass beads, are pumped into the reservoir under high pressure. This procedure has become a widespread and successful method of increasing production. Tests are now being conducted in the use of controlled underground nuclear explosions as a fracturing technique. *Id.* at 159.

For more technical discussions of oil and gas engineering, see G. CHILINGER, G. LANGNES & J. ROBERTSON, JR., *SECONDARY RECOVERY AND CARBONATE RESERVOIRS* (1972); O. SPENCER, *SECONDARY RECOVERY OF OIL* (1949); Beecher & Fowler, *Production Techniques and Control*, in *HISTORY OF PETROLEUM ENGINEERING* 745 (1961); de Witte, *Formation Evaluation*, in *OIL AND GAS PRODUCTION FROM CARBONATE ROCKS* 117 (1972); Lewis, *Fluid Injection*, in *HISTORY OF PETROLEUM ENGINEERING* 847 (1961).

16. See Hardwicke, *supra* note 12, at 398; SUMMERS § 63; 1 WILLIAMS & MEYERS §§ 203-05.

17. For a list of cases affirming the rule of capture, see 1 SUMMERS § 63, at 181-82 nn. 44 & 44.1; 1 WILLIAMS & MEYERS § 204.4, at 51-52 nn. 3-6; Kuntz, *Correlative Rights in Oil and Gas*, 30 Miss. L.J. 1 n.1 (1958).

18. "Correlative rights" is a doctrine that insures adjacent landowners an equal opportunity to recover a fair share of minerals from a common reservoir. See, e.g., *Ohio Oil Co. v. Indiana*, 177 U.S. 190 (1900); *Louisville Gas Co. v. Kentucky Heating Co.*, 117 Ky. 71, 77 S.W. 368 (1903). Although the rule of capture allows an individual to extract minerals from a common source of supply without accounting to his neighbors for any of the production, the "doctrine of correlative rights" prevents him from completely disregarding the interests of those neighbors. Extraction of oil or gas from a common pool inevitably affects all local landowners: as more of a product is recovered by one producer, less can be recovered by others. With the increase in oil and gas production, courts began to temper the rule of capture by applying the "doctrine of correlative rights." Kuntz, *supra* note 17, at 1-2. See also *Higgins Oil & Gas Co. v. Guaranty Oil Co.*, 145 La. 233, 82 So. 206 (1919); *Hague v. Wheeler*, 157 Pa. 324, 27 A. 714 (1893); *Elliff v. Texon Drilling Co.*, 146 Tex. 575, 210 S.W.2d 558 (1948).

The rule of capture led to situations in which operators raced to maximize their own recovery of gas and oil before other producers depleted the reservoir. These operators were unconcerned with increasing the total amount that could be extracted from the common reservoir. Kuntz, *supra* note 17, at 2. Thus, the initial limitations under the doctrine of correlative rights were designed to prevent wanton abuse of the common pool rather than to ensure that adjacent owners recovered a proportionate share of the minerals.

Three elements of the early case law on correlative rights can be discerned: the right against wastage and spoilage of minerals extracted from the pool; the right against malicious depletion; and, the right to a fair opportunity to extract gas and oil from a common pool. *Id.* at 1-2. The prohibitions against waste and spoilage are a judicial recognition of the public interest in conserving valuable energy supplies. *Id.* at 4-5. Waste and

hibits drilling activities that may cause excessive drainage from adjacent land. Many state legislatures have codified the doctrine¹⁰ and have empowered state agencies to oversee drilling operations.²⁰ Under certain circumstances the agencies may abrogate the rule of capture by requiring that a reservoir of oil or gas be exploited by a single unit formed from adjacent land holdings.²¹ Landholders included in the unit

spoilage abuses include damage to the land structure from use of inferior casing, incompetent employees, *see, e.g.*, *McCoy v. Arkansas Natural Gas Co.*, 184 La. 101, 165 So. 636 (1936), or negligent failure to plug an abandoned well, *see, e.g.*, *Hague v. Wheeler*, 157 Pa. 324, 27 A. 714 (1893).

The right to a fair opportunity to extract oil and gas from a common pool does not mean that production must be divided among all interest holders according to either their share of the entire field or the amount of drainage from their tract. Absent statutory provisions for mandatory or voluntary pooling, this doctrine does not abrogate the rule of capture. It merely accords adjacent owners and lessees the co-equal right to produce from the pool when they can do so through their own efforts. *Kuntz, supra* note 17, at 4-5. *See Ohio Oil Co. v. Indiana*, 177 U.S. 190, 209 (1900) ("[C]o-equal right to take from common source of supply . . ."). Fair opportunity amounts to a doctrine of fair competition. All parties must adhere to drilling regulations and must take due care not to damage nearby operations through negligence. *See Manufacturers' Gas & Oil Co. v. The Indiana Natural Gas & Oil Co.*, 155 Ind. 461, 57 N.E. 912 (1900) (statute to prevent waste within police power of state); *Kingwood Oil Co. v. Corporation Comm'n*, 396 P.2d 1008 (Okla. 1964) (correlative rights amount to duty of owner not to injure source of supply nor take undue proportion); *Patterson v. Stanolind Oil & Gas Co.*, 182 Okla. 155, 77 P.2d 83 (1938) (limitations on well spacing within police power of state). The fair opportunity doctrine increasingly has become the subject of legislation. State conservation statutes prohibiting waste often include within the definition of waste abuse of the fair opportunity doctrine. *See* note 19 *infra*.

19. ARK. STAT. ANN. § 53-110 (1971 repl. vol.) provides: "Waste of oil or gas as defined in this act . . . is hereby prohibited." Section 53-109(I) provides:

"Waste" in addition to its ordinary meaning, shall mean 'physical waste' as that term is generally understood in the oil and gas industry. It shall include:

.....

Abuse of the correlative rights and opportunities of each owner of oil or gas in a common reservoir due to nonuniform, disproportionate, and unratable withdrawal causing undue drainage between tracts of land.

Many other states have enacted oil and gas conservation statutes defining "waste" in similar language. *See, e.g.*, ALA. CODE tit. 26, § 179(25)(I)(3) (1958); FLA. STAT. ANN. § 377.19(10)(K) (1974); GA. CODE ANN. § 43-702(I)(3) (1974); N.C. GEN. STAT. § 113-389(14)(c) (1975), *cited in* 1 SUMMERS § 71, at 198 n.5.2. A complete list of oil and gas conservation statutes may be found in 5 SUMMERS §§ 1000-51.

20. *See* 1 SUMMERS § 71, at 198-99 n.5.3.

21. Efficiency often requires adjacent landowners to work as a single unit to exploit a reservoir of oil or gas, especially when using secondary recovery operations. Geologists determine the optimum placement of wells within the unitized area, so that many members of a unit will not have a production well placed on their property. The rule of capture, by awarding title to the oil to the owner of the land on which it is produced, would be unjust in both voluntary and compulsory unitization arrangements. In volun-

receive a prorata share of the profits. State regulations, however, do not cover all minerals in which drainage and abuse of correlative rights can occur.²²

In *Young v. Ethyl Corp.*,²³ the Eighth Circuit, applying Arkansas law, distinguished *Budd v. Ethyl Corp.*²⁴ in which a similarly situated plaintiff²⁵ had been denied relief in the state courts. The *Young* court

tary arrangements the rule is discarded by agreement; while in compulsory unitization state regulations abrogate the rule and require that each member receive a proportionate share of the proceeds. Bowen, *Secondary Recovery Operations—Their Value and Legal Problems*, 13th ANN. INST. ON OIL AND GAS LAW AND TAXATION 331, 369-70 (1962).

While unitization originally occurred on a voluntary basis, a single obstreperous owner can block the entire arrangement. Recognizing the difficulty in securing voluntary unitization and the need for efficient oil and gas recovery, many states have passed mandatory unitization statutes empowering state agencies to require unitization upon request of a specified percentage of land owners. Oklahoma enacted the first such statute in 1945. *Id.* at 363. See *id.* at 363 n.68, citing ALA. CODE tit. 26, § 179(71) (Cum. Supp. 1973); ALASKA STAT. § 31.05.110 (1962); ARK. STAT. ANN. § 53-115 (Cum. Supp. 1975); CAL. PUB. RES. CODE §§ 3315-3347 (Deering 1963); FLA. STAT. ANN. § 377.28 (Supp. 1975); IND. STAT. ANN. § 13-4-7-14 (Burns 1973); LA. REV. STAT. ANN. § 30.5 (West 1975); MICH. STAT. ANN. § 13.139(13) (1975); NEV. REV. STAT. § 522-070 (1973); OKLA. STAT. ANN. tit. 52, § 286.1 (1969); ORE. REV. STAT. § 520.220 (1973); S.D. COMPILED LAWS ANN. § 45-9-38 (1967).

22. The secondary recovery of salt water brine is a clear example of a mineral in which abuse of correlative rights is not prevented by state conservation regulations. The Arkansas Oil and Gas Board has no authority to require unitization of salt water recovery operations or regulate the techniques used, secondary or otherwise. *Budd v. Ethyl Corp.*, 251 Ark. 639, 641, 474 S.W.2d 411, 413 (1971). For a discussion of correlative rights, see note 18 *supra*.

23. 521 F.2d 771 (8th Cir. 1975).

24. 251 Ark. 639, 474 S.W.2d 411 (1971).

25. In *Budd*, the plaintiff owned interests in two tracts of land. One tract was outside but adjacent to the defendants' recycling area. Budd claimed that defendants' operation caused valuable brine to flow from beneath his property towards defendants' production wells. Budd owned an undivided one thirty-sixth interest in the subsurface minerals. *Id.* at 640, 474 S.W.2d at 412. The Arkansas Supreme Court held that the rule of capture applied to the drainage of salt water brine from this piece of property towards defendants' wells. *Id.* at 640-41, 474 S.W.2d at 412-13.

The other piece of property in which Budd had an interest lay within the perimeter of the recycling operation. The *Young* court faced an identical situation except that Budd held merely an undivided one-tenth leasehold interest in the oil, gas, and mineral rights; the defendant held the remaining nine-tenths undivided leasehold interest and the fee. Instead of applying the rule of capture to the drainage from Budd's inside tract, the court decided the case on the limited character of plaintiff's leasehold interest. *Id.* at 641, 474 S.W.2d at 413. Since Budd had no possessory or vested interest in the uncovered minerals beneath that tract, no trespass could occur. See note 2 *supra*. Although plaintiff was denied relief in both situations, the court did not apply the rule of capture to Budd's claim regarding the inside tract. *Id.* at 641-42, 474 S.W.2d at 413.

noted that plaintiff owned the land within the recycling area in fee and therefore had a vested right in the property and subsurface minerals;²⁶ Budd had "owned only an 'inchoate' interest in the 40-acre tract."²⁷ Because the Arkansas Supreme Court had decided *Budd* on the basis of plaintiff's limited interest in the property²⁸ rather than the rule of capture, the Eighth Circuit was not obliged to follow the latter theory in *Young*.

The *Young* court reviewed the original justification for the rule of capture and noted that "the development of more sophisticated knowledge" has led to criticism of "the absolutism with which some courts continue to apply the rule of capture."²⁹ Recognizing that the Arkansas Supreme Court had recently affirmed application of the rule to the natural drainage of salt water,³⁰ the court stated that "it would be unwise to extend the rule to situations in which nonfugacious minerals

26. Arkansas adheres to the ownership-in-place theory of nonsolid minerals. See note 2 *supra*. According to this theory, *Young* had title to the salt water brine beneath his land. *Young* contended, and the Eighth Circuit agreed, that the rule of capture would divest him of title only if the drainage were natural. 521 F.2d at 774.

27. 521 F.2d at 773; see note 25 *supra*.

28. "Although the [*Budd*] court could once again have relied on the law of capture, it did not do so. Instead it denied relief because of Budd's limited interest in the property." *Young v. Ethyl Corp.*, 521 F.2d at 773 (footnote omitted). The footnote omitted from the preceding quotation stated:

The dissenter spoke as if he thought that the majority was applying the law of capture to the tract within the recycling unit. . . . We do not read the majority opinion to have done so.

Id. at 773 n.2.

While *Young* reached a proper result in terms of public policy, the court's attempt to distinguish *Budd* is not wholly convincing. The Eighth Circuit reasoned that, while fully aware of the rule of capture, the Arkansas Supreme Court elected to deny relief for the inside tract on the basis of plaintiff's limited interest; thus, the court implicitly held the rule of capture inapplicable to forced migration. The inference drawn from this negative pregnant is valid only if plaintiff in *Budd* had not contended that the outside tract was subject to forced drainage caused by defendants' operations, a point on which the *Budd* opinion is unclear. 251 Ark. at 641, 474 S.W.2d at 412. If plaintiff's adjacent land were subject to forced drainage, *Budd* would stand for the proposition that the rule of capture applies to both natural and forced drainage.

Moreover, *Budd* held that the leasehold interest created merely an inchoate right because "on account of its vagrant nature, the gas does not become actually owned until actually possessed." 251 Ark. at 642, 474 S.W.2d at 413, quoting *Osborn v. Arkansas Territorial Oil & Gas Co.*, 103 Ark. 175, 146 S.W. 122 (1912). This rationale is identical to the theory underlying the rule of capture. See note 12 *supra*. One may therefore question the Eighth Circuit's conclusion that *Budd* was not controlling.

29. 521 F.2d at 774, citing SUMMERS § 63.

30. 521 F.2d at 772-73. See note 25 *supra*.

are forced from beneath a landowner's property,"³¹ a conclusion the court thought consistent with *Budd*.³²

After holding the rule of capture inapplicable, the court added the dictum that, had the rule been invoked, defendants would still have been liable for abuse of "correlative rights."³³ The court stated that it would be unreasonable to apply one theory of oil and gas law, the rule of capture, without applying its corollary, the doctrine of "correlative rights."³⁴ Since the doctrine of "correlative rights" was not the theoretical basis for granting relief, the court did not discuss the ramifications of this theory in detail.

The strength of the *Young* opinion is its attempt to limit a common law rule that is no longer consistent with scientific knowledge and techniques.³⁵ When the rule originated, operators could not control

31. 521 F.2d at 774.

32. *Id.*

33. *Id.* at 775. Writing for the court, Judge Heaney stated that for oil and gas, the doctrine of "correlative rights" had been codified in ARK. STAT. ANN. §§ 53-109 & 53-110 (1971 repl. vol.). Section 53-109 defines waste to include denying adjacent landowners the opportunity to recover a proportionate share of a common pool of oil or gas, while § 53-110 makes waste an abuse of correlative rights. 521 F.2d at 775.

34. Rather, it has an important corollary in the doctrine of "correlative rights." This doctrine allows owners of land to extract oil or gas from a common pool, but posits two duties which limit the right of a landowner to drain oil and gas from beneath adjacent lands: (1) the duty to other owners not to injure the source of supply; and (2) the duty not to take an undue proportion of the oil and gas from the common pool. . . . If causing undue drainage is an abuse of correlative rights, then *a fortiori* forcing static minerals under one's neighbor's land to migrate amounts to an abuse of those rights. 521 F.2d at 774-75 (footnotes omitted).

35. Almost from its inception, the rule of capture has been under attack. The court in *Barnard v. Monongahela Natural Gas Co.*, 216 Pa. 362, 365, 65 A. 801, 802 (1907), one of the seminal cases developing the rule, stated:

This may not be the best rule, but neither the legislature nor our highest court has given us any better. No doubt many thousands of dollars have been expended 'in protecting lines' in oil and gas territory that would not have been expended if some rule had existed by which it could have been avoided.

At that time, technology could neither control the flow of subterranean fluids nor measure precisely the amount of fluid in place. By the 1930's, however, the underpinnings of the rule were gone, so that in 1935 one commentator stated:

[E]xperts can estimate with approximate accuracy the oil and gas in place in a pool, and the amount ultimately recoverable under any given producing conditions. With a fair amount of data available, relative or comparative figures of a reasonable degree of accuracy can likewise be given with respect to the recoverable reserve of the various leases in the field. Experts can, beyond question, determine the direction of migration of oil and gas, as well as the order of magnitude, and, to a remarkable degree, they can control such migrations.

Hardwicke, *supra* note 12, at 394 (footnote omitted).

drainage, and courts could not ascertain its amount.³⁶ The development of more sophisticated technology and a greater understanding of geology permit oil and gas legislation intended to curb the abuses that would occur with unfettered application of the rule of capture.³⁷ Regulatory agencies today would probably disapprove a secondary recovery operation that would remove a substantial amount of oil or gas from beneath an adjacent tract unless fair compensation were guaranteed to the tract's owner.³⁸

Arkansas has long adhered to the ownership-in-place theory for nonsolid minerals, which vests landowners with title to oil and gas beneath their land.³⁹ Because of the public interest in recovery of these natural resources, however, the Arkansas legislature requires landowners, in some circumstances, to participate in the unit operation of an oil or gas reservoir.⁴⁰ When mandatory unitization occurs, the Arkansas

36. Hardwicke, *supra* note 12, at 397.

37. See generally Franks, *The Rights of Consenting and Nonconsenting Owners Under Secondary Recovery and Pressure Maintenance Operations*, 16th ANN. INST. ON OIL AND GAS LAW AND TAXATION 343 (1965); Hardwicke, *supra* note 12; Keeton & Jones, *Tort Liability and the Oil and Gas Industry II*, 39 TEXAS L. REV. 253 (1961); Kelley, *Trespass in Secondary Recovery*, 17 SW. L.J. 591 (1963); Kennedy, *Tort Liability in Waterflood Operations*, 5 ALBERTA L. REV. 52 (1966); Kuntz, *supra* note 17; Lynch, *Liability for Secondary Recovery Operations*, 22d ANN. INST. ON OIL AND GAS LAW AND TAXATION 37 (1971); Methvin, *Secondary Recovery Operations: Rights of the Non-Joiner*, 42 TEXAS L. REV. 364 (1964); Comment, *Secondary Recovery Operations—Protection of Correlative Rights*, 2 LAND & WATER REV. 129 (1967).

38. Several cases have dealt with the liability of secondary recovery operators who received agency approval for production programs. The cases indicate that agency approval, coupled with an offer of fair participation to neighbors, insulates the operator from liability to any neighbor who refuses to join. Under its police power, a state has authority to promote efficient recovery of natural resources. Using police power as the rationale, some courts have concluded that by refusing a fair offer, landowners are damaged by their own inaction rather than the operation of the unit. See, e.g., *Tide Water Associated Oil Co. v. Stott*, 159 F.2d 174 (5th Cir. 1946), *cert. denied*, 331 U.S. 817 (1947); *Reed v. Texas Co.*, 22 Ill. App. 2d 131, 159 N.E.2d 641 (1959); *California Co. v. Britt*, 247 Miss. 718, 154 So. 2d 144 (1963); *Baumgartner v. Gulf Oil Corp.*, 184 Neb. 384, 168 N.W.2d 510 (1969); *Syverson v. North Dakota State Indus. Comm'n*, 111 N.W.2d 128 (N.D. 1961); *West Edmond Saltwater Disposal Ass'n v. Rosecrans*, 204 Okla. 9, 226 P.2d 965 (1950), *appeal dismissed*, 340 U.S. 924 (1951). *Contra*, *Tide-water Oil Co. v. Jackson*, 320 F.2d 157 (10th Cir.), *cert. denied*, 375 U.S. 942 (1963).

39. *Budd v. Ethyl Corp.*, 251 Ark. 639, 474 S.W.2d 411 (1971); *Bodcaw Lumber Co. v. Goode*, 160 Ark. 48, 254 S.W. 345 (1923). See note 2 *supra*.

40. ARK. STAT. ANN. § 53-115 A-1(b) (1971 repl. vol.) requires mandatory pooling of oil and gas reservoirs when the commission determines that such an order will prevent waste, protect correlative rights, and prevent the drilling of unnecessary wells. Section 53-115 C-2(a) of the Arkansas Statute requires that 75 percent of the owners of the mineral rights within the proposed unit sign a petition seeking the unitization order.

statute protects the individual interests of those compelled to join the unit,⁴¹ but it does not extend to salt water mining.⁴² Absent any

41. ARK. STAT. ANN. §§ 53-115 A-1(b) to C-2(c) (1971 repl. vol.). Two kinds of unitization orders may be issued by a state regulatory agency, "mandatory" or "permissive." 1 SUMMERS § 76, at 242-48; Bowen, *supra* note 21, at 334, 363-64. The mandatory unitization order requires that all production on land within a certain area be operated as a single unit. The agency determines whether unit operation will promote the public welfare and will assure the proper amount of compensation to each member of the unit. Both determinations may be challenged in court as being unreasonable or outside the scope of the enabling statute. A state may authorize mandatory unitization procedures so long as the enabling statute contains reasonable methods for compensating those forced to join the unit. See Bowen, *supra* note 21, at 363-75. See also 6 WILLIAMS & MEYERS §§ 905-05.3.

Permissive unitization orders, however, are issued after a determination that the operation of a proposed secondary recovery unit will promote the public welfare and not abuse the correlative rights of adjacent owners. The permissive order does not give the unit authority to confiscate property of adjacent landowners and should not be equated with a mandatory unitization order. See Bowen, *supra* note 21, at 337-40.

A number of courts, see cases cited note 38 *supra*, have erred by holding that a "permissive" unitization order bars recovery to landowners whose property is adjacent to an approved unit operation. In essence, these courts have transformed a permissive order into a grant of authority to confiscate neighbors' property. For instance, in *Tide Water Associated Oil Co. v. Stott*, 159 F.2d 174 (5th Cir. 1946), *cert. denied*, 331 U.S. 817 (1947), defendant's operation resulted in less valuable "dry" gas replacing "wet" gas beneath plaintiff's land. The court reasoned that the damage was not the result of the authorized operation, but was caused by plaintiff's failure to accept a reasonable offer to join the approved permissive unit. Cf. *Railroad Comm'n v. Manziel*, 361 S.W.2d 560 (Tex. 1962).

Tidewater Oil Co. v. Jackson, 320 F.2d 157 (10th Cir.), *cert. denied*, 375 U.S. 942 (1963), properly interpreted a "permissive" unitization order. Plaintiff's subsurface was flooded by defendant's operation, a foreseeable consequence. Defendant claimed that agency approval of his secondary recovery operation shielded him from liability. In response the court stated:

We must lay aside any question of liability growing out of a compulsory unitization project . . . wherein the relative rights of interested parties are determined and constitutionally protected. We are concerned with a unilateral operation, under a permissive order of the Commission, which authorizes the leaseholder to conduct water flood operations on his own lease, in a common source of supply, subject to the duties, obligations and consequent liabilities imposed by law.

Id. at 162. The court had earlier stated that "the fact that an act is lawfully undertaken and lawfully done does not, ipso facto, relieve the actor of liability for the harmful consequences of his act." *Id.* at 161-62. Although an agency may authorize a recovery program, it cannot authorize confiscation without compensation. *Id.* at 163.

42. We do not agree with the appellant's insistence that the law of capture was completely nullified by the statute which permits the Oil and Gas Commission to bring about compulsory unitization in oil and gas fields. . . . [A]nd furthermore, we find no authority in the Oil and Gas Commission to order the unitization of salt-water operations that have no bearing upon the extraction or conservation of oil or gas.

Budd v. Ethyl Corp., 251 Ark. 639, 641, 474 S.W.2d 411, 412-13 (1971).

statutory remedy, the Eighth Circuit wisely held the defendants liable under a common law theory rather than permitting them to extract brine from beneath plaintiff's property without compensation.⁴³

Although the court correctly rejected defendants' attempt to hide behind an outdated shield, common law trespass was a poor theory on which to base liability.⁴⁴ Other courts confronting the issue of liability for forced subsurface movement of fluid substances have not agreed on a proper theory.⁴⁵ The theory upon which an action is based affects

43. *Young v. Ethyl Corp.*, 521 F.2d 771, 775 (8th Cir. 1975).

44. The choice of trespass as the theory of liability for subsurface movement of pressurizing substances across property lines seems obvious. If the law of trespass for forced surface movement were applied to subsurface movement, intentional trespass would certainly be the proper theory. See W. PROSSER, *HANDBOOK ON THE LAW OF TORTS* § 13 (4th ed. 1971). During secondary recovery operations, the movement of salt water or other fluids across property lines is not only foreseeable but virtually inevitable. *Lynch*, *supra* note 37, at 64. See also *Baumgartner v. Gulf Oil Corp.*, 184 Neb. 384, 388, 168 N.W.2d 510, 513 (1969) ("The introduction of water into an oil reservoir causes oil and water to migrate across lease lines and it is impossible to restrict the advance of the water to the lease lines"). The certainty of the movement, however, is precisely what makes trespass an unworkable theory. If courts were to apply a trespass theory, the operator of every secondary unit would be subject to liability regardless of actual damage. See *Lynch*, *supra* note 38, at 64. A number of courts have apparently rejected the trespass theory. See, e.g., *Greyhound Leasing & Financial Corp. v. Joiner City Unit*, 444 F.2d 439 (10th Cir. 1971); *Reed v. Texas Co.*, 22 Ill. App. 2d 131, 159 N.E.2d 651 (1959); *California Co. v. Britt*, 247 Miss. 718, 154 So. 2d 144 (1963); *Baumgartner v. Gulf Oil Corp.*, *supra*; *Gulf Oil Corp. v. Hughes*, 371 P.2d 81 (Okla. 1962); *Railroad Comm'n v. Manziel*, 361 S.W.2d 560 (Tex. 1962). Cf. *Mowrer v. Ashland Oil & Ref. Co.*, 518 F.2d 659 (7th Cir. 1975).

The decision to institute secondary recovery operations is always risky. Fixed costs are high and rewards uncertain. Considering the risk involved and the almost certain tort liability under a trespass theory, many operators would choose to forego operations they otherwise would undertake. Not only does trespass liability dissuade the potential organizer, it discourages those who would be asked to join the unit. The nonjoiner could forego the risks and be certain to collect damages for trespass. *Lynch*, *supra* note 38, at 64. See also *Lawson, Recent Developments in Pooling and Unitization*, 23d ANN. INST. ON OIL AND GAS LAW AND TAXATION 145, 203-04 (1972). The courts should not develop a theory of liability that unnecessarily burdens the method of recovery best suited to social needs.

45. In addition to trespass several other theories have been suggested. Strict liability, nuisance, and fault theories comprise the major proposals falling within traditional tort concepts. At least one writer, see *Comment*, *supra* note 37, has suggested a novel approach to liability for secondary recovery operations by recommending that abuse of correlative rights become a distinct tort concept. *Id.* at 141, 142. Only California has settled the issue through the legislative process. See CAL. PUB. RES. CODE § 3320.5 (Deering 1961) (operators liable only for damages caused by negligence).

The rationale for strict liability is that a business venture should bear all normal expenses of doing business. Since the movement of fluid across property lines during sec-

ondary operations is virtually inevitable, "the enterprise" should include in its estimated costs the damage caused by the encroachment. Green, *Hazardous Oil and Gas Operations: Tort Liability*, 33 TEXAS L. REV. 574, 579-81, 584 (1955). Strict liability suffers from the same problem of rigidity as trespass. See note 44 *supra*. If liability were absolute, the threat of damage suits would become a tremendous burden on secondary recovery. "A money judgment for damages in any substantial amount could be the difference between profitability and loss in any given project." Bowen, *supra* note 21, at 350. Under strict liability theory the operator may displace a certain amount of oil beneath a neighbor's land, and be held liable for damages even though the displacement does not reduce the neighbor's total recovery and the unit operation itself is in the public welfare. See Lynch, *supra* note 37, at 65-66. Strict liability is apparently the rule in Oklahoma. Greyhound Leasing & Financial Corp. v. Joiner City Unit, 444 F.2d 439 (10th Cir. 1971) (damages recovered without any negligent act); Gulf Oil Corp. v. Hughes, 371 P.2d 81 (Okla. 1962) (private nuisance without negligence). For a discussion of the Oklahoma strict liability standard, see Lawson, *supra* note 44, at 197-209. See also Foster & Keeton, *Liability Without Fault in Oklahoma*, 3 OKLA. L. REV. 1 (1950).

Private nuisance has also been advocated as a theory of liability. See Methvin, *supra* note 37, at 373. A theory of private nuisance would differ from that of strict liability because courts could consider a number of factors before assessing liability. For example, the court would determine whether the unit had minimized the encroachment; whether unit operations were in the public interest; and whether actual damage had occurred. The unit's operation would be a nuisance if the producers failed to prevent as much drainage as possible and reduced the neighbor's ability to recover a fair share of the oil or gas in the common reservoir. Lynch, *supra* note 37, at 67-68.

Considering either a permissive or compulsory unitization order, Lynch claims that this theory describes a result, not a theory of liability. With a unitization order a state regulatory agency has already determined that the unit operation is in the public welfare and that the correlative rights of adjoining owners have been protected. Therefore, liability for private nuisance should only attach when the operators of the unit have failed to take all reasonable precautions to prevent undue drainage. Failure to take reasonable precautions turns the theory into a fault or negligence standard. *Id.* at 67-68. If liability were to attach after a unitization order when drainage occurs, without failure to take reasonable precautions, a theory of private nuisance becomes one of strict liability and works a heavy burden on the oil and gas industry. *Id.* at 67. See Mowrer v. Ashland Oil & Ref. Co., 518 F.2d 659, 662 (7th Cir. 1975) ("The trial court correctly held that the doctrine of nuisance was applicable . . .").

The best theory on which to base liability is a negligence or fault theory. This concept is supported by Bowen, *supra* note 21, at 359, and by Lynch, *supra* note 37, at 72-73. Using a fault theory, courts would determine if *actual* damage had occurred; whether it was foreseeable; and whether the operator had taken reasonable precautions to prevent undue drainage. This theory provides needed flexibility, while still affording the nonjoiner protection from negligent or willful damage. A fault concept would limit damages to instances when plaintiff's total recovery is reduced. "[O]nly the theory of fault properly recognizes the physical nature and social utility of secondary recovery operations." Lynch, *supra* note 37, at 72.

The fault concept also best balances the functions of the state conservation agency and the court. Prior to commencing secondary recovery procedures, the agency determines whether the program is in the best interests of society, see, e.g., ARK. STAT. ANN. § 53-101 (1971 repl. vol.), and protects the correlative rights of adjoining tract owners. If damage occurs, the court would then determine if the unit were operated negligently. Courts would apply the same negligence concept to both primary and secondary activity.

both liability and the measure of damages.⁴⁶ The *Young* court merely concluded that the actions of the defendants constituted an actionable trespass without discussing the merits of trespass as the legal basis for

When a program is deemed to be in the public interest, it is desirable to base liability on fault. *Id.* at 71-72.

One novel approach turns abuse of correlative rights into a theory rather than a result. This approach considers whether the operator has taken the proper precautions to prevent undue drainage between tracts. If the precautions were reasonable and the operator did not intentionally abuse adjacent owners, then liability would not attach for any drainage that occurred. This approach accepts the rule of capture but does not assume landowners have a right to all oil or gas beneath their land. Instead, it merely imposes a duty on operators to take reasonable precautions against excess drainage. *See Comment, supra* note 37, at 141-42.

46. The function of tort law is to compensate an injured party "for the damage he has suffered, at the expense of the wrongdoer." W. PROSSER, *supra* note 44, § 2, at 7. A number of different tort theories have evolved in order to accomplish this task. Each theory has not only different elements that must be satisfied before liability attaches but also a different measure of damages. This is clearly illustrated by the difference between damages for negligent conduct and damages for intentional trespass. In actions based on negligent trespass, plaintiff is compensated only for actual damage incurred. In actions based on intentional trespass, however, plaintiff may be awarded punitive damages and even compensatory damages despite the absence of actual damage. *Id.* at 1-4, 10-11.

In secondary recovery cases the court can easily distort the purpose of tort law by applying the wrong theory of liability. For example, in actions based on conversion, damages are generally measured by the full value of the goods or chattels taken with no deduction for expenses incurred by the defendant. *Id.* at 96-97. *See, e.g.,* Pan American Petroleum Corp. v. Candelaria, 403 F.2d 351, 355-56 (10th Cir. 1968); Baumgartner v. Gulf Oil Corp., 184 Neb. 384, 389-90, 168 N.W.2d 510, 514 (1969). *See also* 1 SUMMERS § 24. Although this measure of damages may be equitable in most trespass and conversion situations, it is ineffective in secondary recovery cases. The amount of drainage from beneath a certain tract of land is often not the true measure of damage suffered by the owner. Using the traditional computation of damages for conversion, a plaintiff may recover the market value of the oil drained from beneath his land, even though the adjacent pressurizing operation actually increases the recovery of oil through his own wells. The amount of recoverable oil beneath a tract varies with the direction and level of pressure exerted on the oil. The adjacent secondary operation may drain some oil, but it may also pressure more of the remaining oil towards plaintiff's wells. *See Lynch, supra* note 37, at 74-79; *see, e.g.,* Reed v. Texas Co., 22 Ill. App. 2d 131, 138-39, 159 N.E.2d 641, 645 (1959); Carter Oil Co. v. Dees, 340 Ill. App. 449, 459, 92 N.E.2d 519, 524 (1950). A theory of liability must be coupled with a system which properly measures the amount of damage actually sustained.

Young illustrates a situation in which the use of the trespass or conversion measure of damages does not accurately reflect the actual damages sustained. The plaintiff had a large amount of valuable brine taken from beneath his land and asked for damages in the amount of \$9,000,000 to cover the value of the minerals taken. 382 F. Supp. at 772. *See also* Brief for Appellant at 1, 25-30, *Young v. Ethyl Corp.*, 521 F.2d 771 (8th Cir. 1975). This figure is a totally inaccurate reflection of plaintiff's actual damages. Had plaintiff undertaken primary or secondary recovery operations on his own land, he could not have recovered a profitable amount. *Id.* at 17-18, so that an award

the result.⁴⁷ As the injection of pressurizing substances into mineral reservoirs becomes more frequent, the issue of subsurface trespass may become a significant legal problem. Only a well-reasoned analysis distinguishing trespass, intentional taking, strict liability, private nuisance, negligence, and abuse of "correlative rights" will lead to consistent, just results.⁴⁸

The *Young* decision could affect oil and gas producers as well as salt-water recovery operations. Although the court did not explicitly hold that trespass applied to the secondary recovery of gas and oil, it did clearly disapprove of the rule of capture if used to protect forced migration of nonfugacious minerals.⁴⁹ Since oil and gas are primarily nonfugacious at the secondary recovery stage, *Young* may persuade other courts to discard the rule of capture when dealing with secondary recovery in favor of liability based on trespass. If so, landowners would be dissuaded from leasing mineral rights or participating in joint ventures in the hope of receiving large damage awards; oil and gas producers would face increased litigation. At a time when society requires efficient gas and oil recovery techniques, this would be a significant problem.

A negligence theory of liability would least hinder resource recovery while protecting the individual rights of landowners. The failure to take reasonable precautions to prevent foreseeable drainage would expose operators to liability for damages measured by the net value of the resources thus extracted.⁵⁰ The common law negligence standard best balances the conflicting interests of the landowners and serves the interests of society.

based on the product taken would be a windfall for plaintiff. Although the Eighth Circuit did not adjust the damages, it remanded the case to the district court after finding liability under the theory of intentional trespass. 521 F.2d at 775. Were the district court to fix damages by applying traditional damage measures, plaintiff's recovery would far exceed the amount of his actual damages.

47. 521 F.2d at 774-75.

48. See notes 44-46 *supra*.

49. 521 F.2d at 774.

50. For a discussion of the negligence theory, see note 45 *supra*.